

Remarks / Arguments

Amendments to the Claims

Claims 1, 13, 21, and 30 have been amended to clarify that the Raman spectrum is acquired from a Raman probe that is inserted into the polymerization reactor and that the sampling is *in situ* in the reactor. Support for this amendment can be found in Paragraphs [0172] and [0181], *inter alia*, of the application as originally filed.

Claims 35-48 have been cancelled.

Claim Objections

Claims 35 and 39 have been objected to. These claims have been cancelled, thus the objection is now moot.

Rejections Under 35 U.S.C. §112, ¶2

Claims 3, 13-20, 23, and 30-34 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the claims are considered to be indefinite as the term “locally” in Claims 3, 13, 23, and 30 is considered to be a relative term which is indefinite as to the metes and bounds between what is locally weighted and what is not locally weighted. Applicants respectfully traverse this rejection and request reconsideration.

Applicants respectfully submit that the term “locally” as in a locally weighted regression (“LWR”) model is not indefinite as one of ordinary skill in the art at the time of invention would have understood what the term meant and could determine the metes and bounds of what is claimed. LWR is a math modeling tool that is well known in the art. In the application as originally filed, applicants have referenced publications from 1990 and 1993 which describe LWR modeling. *See* Paragraph [0103]. Furthermore, Applicants have described LWR modeling in the application. A LWR model is one that assumes that a smooth non-linear function can be approximated by a linear or relatively simple non-linear (such as quadratic) function, with only the closest data points being used in the regression. *See* Paragraph [0109]. Therefore, Applicants submit that one skilled in the art at the time of the invention would have known what was meant by a “locally weighted regression model” and the term should not be considered indefinite.

Rejection Under 35 U.S.C. § 102 / § 103

Claims 1-7, 9, 11-15, 17, 19-28, and 30-33 have been rejected under 35 U.S.C. §102(b) as being anticipated by PCT Application WO 01/09203 to Long *et al.* (herein "Long") in light of Geosoft Technical Note downloaded from geosoft.com in February 2009 (herein "Geosoft"). Claims 8, 10, 16, 18, 29, and 34 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Long as evidenced by Geosoft. Applicants respectfully traverse this rejection and request reconsideration.

Long discloses the use of a Raman spectrum and regression modeling to determine the concentration of a constituent in a reaction mixture. From the determined constituent concentration in the reaction mixture, a correlated final polymer product is projected. *See* Long, Page 11, Lines 10-18. The concentration of a particular constituent is determined based on measurements of a known Raman peak corresponding to the particular constituent for which a concentration is sought. *See* Page 10, Lines 3-10. Specifically, Long discloses using a Raman spectrum and regression modeling to determine the hydrogen concentration in a reaction vessel. From this determination, a second step is used to correlate the determined hydrogen concentration to projected melt flow properties of the polymer ultimately produced in the reaction vessel. *See* Long, Page 11, Lines 1-9.

In contrast, the claimed processes in independent Claims 1, 13, 21, and 30, provide methods for directly determining the properties of a polymer product using a Raman spectrum and regression modeling. There is no need to make a correlation between a measured reaction mixture constituent concentration and a projected ultimate polymer product property. The claimed processes provide a simpler process for determining various properties of finished polymer products. A particular advantage of the claimed processes is the determination of polymer properties without the need to identify, select, or resolve specific spectral features. There is no need to identify a particular spectral feature as resulting from a particular mode or a particular moiety of the polymer, nor is it necessary to selectively monitor Raman scattering corresponding to a selected spectral feature. Through the use of the claimed processes, a direct determination of the desired polymer property is possible. Thus, Applicants submit that Long does not teach or suggest a process which directly measures finished polymer properties as recited in the pending claims. As Long does not disclose each element of the claimed invention,

Applicants submit that the claimed invention is novel and not obvious in view of Long, and request that the rejections be withdrawn.

The Office Action has cited Geosoft as showing it is inherent to use principal component loadings for PCA analysis. Applicants respectfully object to the use of Geosoft as a reference. Prior art disclosures on the Internet can only be considered to be publicly available as of the date the item was publicly posted. The Geosoft reference provided in the Office Action makes no mention of its publication date. The Office Action states that the Geosoft reference was retrieved from the Internet in February of 2009 which is after Applicant's filing date. Thus, Applicants submit that it is unknown what information the website may have contained, if the website even existed, at the time of Applicant's invention. As there is no evidence of a publication date prior to Applicant's filing date in Geosoft, Applicants submit that it cannot be relied upon as prior art under 35 U.S.C. §102(b).¹ Applicants further submit that it cannot be relied on to show what the state of the art at the time of the invention was, as there is no evidence that this was known at the time of invention, only that it was available when retrieved in February 2009.

Rejections Under 35 U.S.C. §103

A. Claims 35-44 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,144,897 to Selliers (herein "Selliers") in view of Long as evidenced by Geosoft. Applicants have cancelled these claims, thus the rejection is now moot.

B. Claims 37 and 45-48 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 5,112,127 to Carrabba *et al.* (herein "Carrabba") in view of Applied Physics Letters, Vol. 68, 1996, pages 2810-2812, by Limb *et al.* (herein "Limb"). Applicants have cancelled these claims, thus this rejection is now moot.

Double Patenting

A. Claims 1-8, 13-16, and 21-34 have been rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-26 of U.S. Patent No. 7,116,414 in view of Long.

¹ M.P.E.P. 2128 "Absent evidence of the date that the disclosure was publicly posted, if the publication itself does not include a publication date (or retrieval date) [prior to Applicant's filing date], it cannot be relied upon as prior art under 35 U.S.C. 102(a) or (b)."

Applicants respectfully submit that, due to the still-changeable nature of the claims, this rejection should be held in abeyance until such point as the pending claims are allowable but for such double patenting rejections. If the claims of the instant application are found to be allowable, then Applicants would be amenable to filing a supplemental response with a terminal disclaimer over the '414 patent.

B. Claims 1-8, 13-16, 21-25, 28-29, and 30-34 have been rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6, 9, 13-16, 20-24, 28-29, and 33-37 of U.S. Patent No. 7,106,437 in view of Long.

Applicants respectfully submit that, due to the still-changeable nature of the claims, this rejection should be held in abeyance until such point as the pending claims are allowable but for such double patenting rejections. If the claims of the instant application are found to be allowable, then Applicants would be amenable to filing a supplemental response with a terminal disclaimer over the '437 patent.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned. If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1712 (Docket #2001B101B).

Respectfully submitted,

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Date

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